

Trend Study 21B-12-03

Study site name: Dameron Canyon.

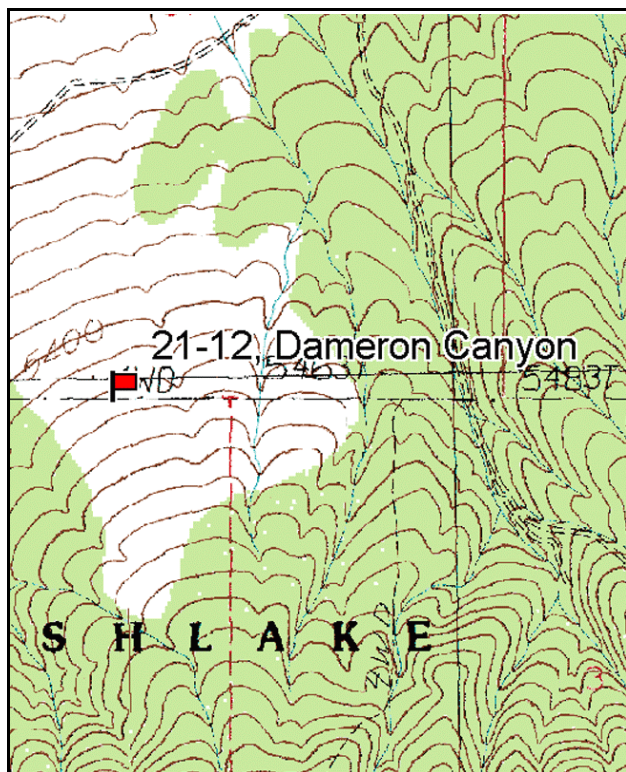
Vegetation type: Bitterbrush-Sagebrush.

Compass bearing: frequency baseline 180 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 4 on 1ft.

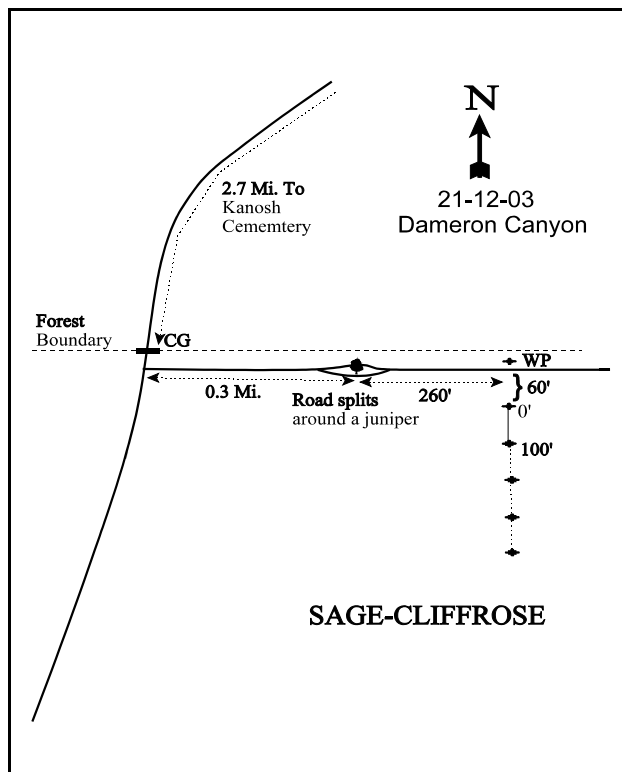
LOCATION DESCRIPTION

Go south on the main road from Kanosh. Continue south on a dirt road towards the cemetery when the main road turns west towards the interstate. From the northeast corner of the Kanosh cemetery (1/2 mile south of town), follow the main road south for 2.7 miles to a cattleguard. Just past the cattleguard turn left and go 0.3 miles along the fence to a faint road. Where the road rejoins, go 260 feet to a witness post on the left side of the road by the fence. The witness post is a steel rebar stake 2 1/2 feet tall. From the witness post go 60 feet due south to the start of the frequency baseline. The 0-foot baseline stake is tagged #7109. The 100-foot end of the baseline is marked by a stake that is actually only 98 feet south, so the tape must be adjusted at that end.



Map Name: Fillmore

Township 24S, Range 5W, Section 4



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4290937 N, 373252 E

DISCUSSION

Dameron Canyon - Trend Study No. 21-12

The Dameron Canyon trend study samples a fairly flat area of sagebrush, cliffrose, and juniper south of Kanosh. The slope is very gradual (1-3%) and drains to the north at an elevation of 5,400 feet. The transect lies just inside the Forest Service boundary and may be effected by differential grazing pressure because of its proximity to the Forest Service fence. The range is supposedly used for early spring grazing by cattle, but no signs of early season use were found during any reading. The Forest Service has allowed free use firewood cutting here to help reduce juniper competition with the more desirable browse species. Surrounding areas dominated by juniper do not produce as much palatable browse, therefore receive little deer use. Deer use on the study site has been heavy, as evidenced by the past intense hedging on the cliffrose and bitterbrush. However, the DWR Dameron pellet group transect located about one mile to the west, averaged only 26 deer days use/acre (64 ddu/ha) between 1985 and 1990 (Jense et al. 1990). Pellet group data from the site in 1998 estimated 143 deer days use/acre (353 ddu/ha). Pellet group transect data from 2003 estimated 175 deer days use/acre (431 ddu/ha) and 5 cow days use/acre (12 cdu/ha). Most of the deer pellet groups in both years were from the winter use. Part of the baseline, including the first frequency belt, was chained following the 1985 reading.

Soil on this site is moderately shallow and rocky with an effective rooting depth estimated at just under 10 inches. Soils are loam in texture with a neutral pH (6.8). Bare ground was common during the 1985 and 1991 readings at 21% and 27% respectively. It has since declined to 10% in 1998 and 16% in 2003. In 2003, the interspaces were dominated by cheatgrass and Sandberg bluegrass which effectively minimize erosion. Soils were rated as stable by an erosion condition class assessment completed in 2003. Average soil temperature was relatively high at 68°F in 2003 indicating a dry soil profile.

Key browse species found on the site include mountain big sagebrush, bitterbrush, and a few cliffrose. Mountain big sagebrush provided 44% of the browse cover in 1998, increasing to 63% in 2003. Density was estimated at 2,840 plants/acre in 1998 and 2,560 in 2003. Density estimates were much higher in 1985 and 1991 with the smaller sample size used in those years. The big sagebrush population has steadily become more mature over the years. Recruitment from the young age class was moderately high in 1985 and 1991 at 26% and 22% respectively. Young plants made up 12% of the population in 1998, but only 2% in 2003. Percent decadence has remained within an acceptable range in all years (14%-24%), and vigor has generally been good. Annual sagebrush leaders had averaged 1.6 inches of growth in June 2003.

Antelope bitterbrush provided 18% of the browse cover in 1998, increasing to 27% in 2003. Density was estimated at 400 and 360 plants/acre in 1998 and 2003 respectively. The population consisted entirely of heavily hedged mature and decadent plants in 2003. Although classified as vigorous in past years, bitterbrush was noted as producing minimal leader growth. Reproduction from seed has been poor with no young plants sampled during any of the readings. Only a few seedlings were encountered in 1998. There may be some reproduction occurring by the layering of stems. Bitterbrush annual leaders averaged just over 3 inches of growth in June of 2003. Stansbury cliffrose provides some additional forage on the site but these shrubs occur in small numbers. Cliffrose and bitterbrush are hybridizing on the site which has made identification difficult. Cliffrose plants are taller than bitterbrush and show high-lining. Most of the new growth is partly unavailable to browsing.

Broom snakeweed was the most abundant shrub on the site in 1991 and 1998 in terms of numbers. It contributed 28% of the total browse cover in 1998, decreasing to only 6% in 2003. Snakeweed density was estimated at 10,540 plants/acre in 1998, but only 1,320 in 2003. The decline in population is due mostly to drier conditions since the 1998 reading.

The herbaceous understory was totally dominated by annual grasses and forbs in 1998. Cheatgrass was by far the dominant understory species in 1998 as it provided 79% of the grass cover. Significant decreases in cheatgrass cover and nested frequency in 2003 have reduced its dominance, but it still remains abundant. With the exception of Sandberg bluegrass, perennial herbaceous vegetation is lacking. Sandberg bluegrass accounted for 18% of the grass cover in 1998, increasing to 59% in 2003. Sandberg bluegrass significantly increased in nested frequency in 2003 and cover tripled. Perennial forbs were rare from 1985 to 1998, and none were sampled in 2003.

1985 APPARENT TREND ASSESSMENT

Soil trend appears stable and the vegetative trend appears downward. With the heavy utilization and lack of reproduction of the cliffrose and bitterbrush, these populations appear to be slowly declining. Any practices that encourage growth and reproduction of the cliffrose and bitterbrush would be advocated. Chaining openings within the dense pinyon-juniper stands nearby could relieve some of the pressure on this area.

1991 TREND ASSESSMENT

Soil trend is slightly downward. Basal vegetation cover has gone up slightly to 3.5%, but this is still too low. Percent rock and pavement cover have increased to 17%. Litter cover has decreased to 53% with bare soil increasing to 27%. Browse trend is also slightly downward at this time. The most abundant browse species is mountain big sagebrush. Percent decadence has increased to 24%. At the next survey, it will be of interest to determine what percentage of the seedlings have survived as the reproductive potential is very high at 76% (3,666 seedlings/acre). The few cliffrose that were on the site before are no longer present. Bitterbrush has decreased by 40% (332 plants/acre to 200 plants/acre). The broom snakeweed has increased by almost fivefold to 7,198 plants/acre. As with most of the other sites in management unit 21, the herbaceous understory is poor. The most common perennial species is a very small Sandberg bluegrass. Trend is stable, but the understory is in poor condition with the composition consisting mostly of weedy increasers and annuals.

TREND ASSESSMENT

soil - slightly downward (2)

browse - slightly downward (2)

herbaceous understory - stable (3)

1998 TREND ASSESSMENT

Trend for soil is up with a substantial decline in percent bare ground from 27% in 1991 to 10% in 1998. Rock and pavement cover have declined, while percent litter cover has increased. Unfortunately, most of these positive changes are due to a vigorous stand of annual cheatgrass. Photo point comparisons show cheatgrass on the site since 1985, but it has become more dense and vigorous since then and currently poses a fire hazard. Trend for browse is stable. Sagebrush provides 71% of the preferred browse cover. The sagebrush shows a 40% decline in density since 1991. However, some of this change is due to the much larger sample used in 1998. In addition, density of mature plants has remained fairly stable since the last reading, although the number of plants in the other age classes has declined substantially. Utilization of the sagebrush is mostly light. Vigor has improved slightly while percent decadence has declined from 24% to 18%. Young plants have declined but still remain adequate to maintain the population. The bitterbrush population is mostly mature with little apparent reproduction. However, vigor is good, utilization mostly moderate, and percent decadence very low at only 5%. Trend for the herbaceous understory is stable, but still in poor condition due to the dominance of annual grasses and forbs.

TREND ASSESSMENT

soil - up (5)

browse - stable (3)

herbaceous understory - stable (3)

2003 TREND ASSESSMENT

Trend for soil is stable. There have been changes in ground cover characteristics, but none of them are severe. Litter cover declined while bare ground increased, but vegetation cover remains high at nearly 52%. The decline in litter cover and corresponding increase in bare soil is due to the decline of cheatgrass. Soil erosion remains low. Trend for browse is stable. Mountain big sagebrush and bitterbrush show slight declines in density, but maintain low decadence and generally good vigor. Reproduction is low for both species, but this is expected with the abundance of weedy annuals in the understory and drier weather since 1998. Trend for the herbaceous understory is slightly up. Cheatgrass remains abundant in the understory, but did decline in nested frequency and cover. Sandberg bluegrass showed a significant increase in nested frequency in 2003 and average cover tripled. Perennial forbs have been sparse, with none being sampled in 2003.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly up (4)

HERBACEOUS TRENDS --

Management unit 21 , Study no: 12

Type	Species	Nested Frequency				Average Cover %	
		'85	'91	'98	'03	'98	'03
G	Agropyron cristatum	-	-	3	-	.03	-
G	Agropyron spicatum	_a -	_a 3	_{ab} 11	_b 12	.21	.39
G	Bromus japonicus (a)	-	-	11	6	.21	.07
G	Bromus tectorum (a)	-	-	_b 349	_a 264	19.84	8.28
G	Poa bulbosa	-	-	-	7	-	.18
G	Poa secunda	_a 193	_a 189	_a 168	_b 299	4.42	13.53
G	Secale montanum	-	-	2	-	.00	-
G	Sitanion hystrix	_b 26	_a 2	_a 14	_b 26	.29	.58
Total for Annual Grasses		0	0	360	270	20.04	8.35
Total for Perennial Grasses		219	194	198	344	4.97	14.69
Total for Grasses		219	194	558	614	25.02	23.04
F	Alyssum alyssoides (a)	-	-	_b 48	_a 22	.48	.05
F	Allium spp.	-	-	1	-	.00	-
F	Arabis spp.	-	-	7	-	.01	-
F	Astragalus calycosus	-	-	3	-	.00	-
F	Calochortus nuttallii	-	-	8	-	.02	-

T y p e	Species	Nested Frequency				Average Cover %	
		'85	'91	'98	'03	'98	'03
F	<i>Collinsia parviflora</i> (a)	-	-	-	4	-	.01
F	<i>Draba</i> spp. (a)	-	-	_b 55	_a 9	.19	.01
F	<i>Epilobium brachycarpum</i> (a)	-	-	6	-	.01	-
F	<i>Erodium cicutarium</i> (a)	-	-	-	8	-	.21
F	<i>Holosteum umbellatum</i> (a)	-	-	_b 223	_a 32	2.42	.17
F	<i>Lactuca serriola</i>	_a -	_b 55	_a 1	_a -	.00	-
F	<i>Lomatium</i> spp.	-	-	3	-	.03	-
F	<i>Machaeranthera canescens</i>	-	-	8	-	.01	-
F	<i>Microsteris gracilis</i> (a)	-	-	16	6	.03	.02
F	<i>Phlox longifolia</i>	4	-	5	-	.01	-
F	<i>Polygonum douglasii</i> (a)	-	-	3	-	.01	-
F	<i>Ranunculus testiculatus</i> (a)	-	-	39	19	.12	.08
F	<i>Tragopogon dubius</i>	-	-	15	-	.19	-
F	Unknown forb-perennial	4	-	-	-	-	-
F	<i>Zigadenus paniculatus</i>	-	1	-	-	-	-
Total for Annual Forbs		0	0	390	100	3.26	0.56
Total for Perennial Forbs		8	56	51	0	0.29	0
Total for Forbs		8	56	441	100	3.56	0.56

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 21 , Study no: 12

T y p e	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	<i>Artemisia tridentata vaseyana</i>	74	73	13.55	16.64
B	<i>Chrysothamnus nauseosus</i>	1	0	1.00	-
B	<i>Cowania mexicana stansburiana</i>	2	1	.33	.15
B	<i>Gutierrezia sarothrae</i>	77	31	8.80	1.67
B	<i>Juniperus osteosperma</i>	1	2	1.63	.78
B	<i>Purshia tridentata</i>	17	14	5.50	6.99
B	<i>Ribes cereum cereum</i>	1	0	.15	-
B	<i>Sambucus cerulea</i>	1	0	-	-
Total for Browse		174	121	30.98	26.23

CANOPY COVER, LINE INTERCEPT --
Management unit 21 , Study no: 12

Species	Percent Cover
	'03
Artemisia tridentata vaseyana	19.43
Gutierrezia sarothrae	1.11
Juniperus osteosperma	2.43
Purshia tridentata	10.19

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 21 , Study no: 12

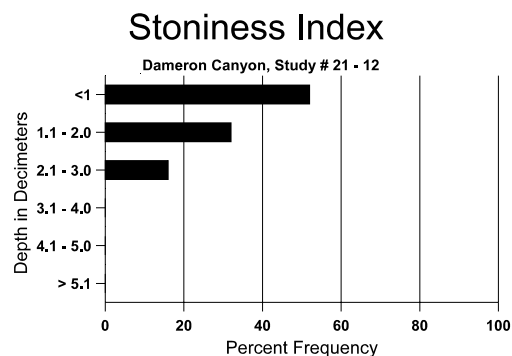
Species	Average leader growth (in)
	'03
Artemisia tridentata vaseyana	1.6
Purshia tridentata	3.1

BASIC COVER --
Management unit 21 , Study no: 12

Cover Type	Average Cover %			
	'85	'91	'98	'03
Vegetation	3.00	3.50	49.84	51.87
Rock	4.50	5.25	5.39	4.44
Pavement	7.50	12.00	6.49	6.28
Litter	64.25	52.50	61.09	40.47
Cryptogams	0	.25	1.30	.00
Bare Ground	20.75	26.50	9.62	15.61

SOIL ANALYSIS DATA --
Management unit 21, Study no: 12, Study Name: Dameron Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
9.6	68.0 (13.1)	6.8	44.7	30.7	24.6	3.7	11.9	163.2	0.9



PELLET GROUP DATA --

Management unit 21 , Study no: 12

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'03	'98	'03
Rabbit	8	1	-	-
Elk	2	-	1 (2)	-
Deer	50	37	143 (353)	175 (431)
Cattle	1	1	-	5 (13)

BROWSE CHARACTERISTICS --

Management unit 21 , Study no: 12

		Age class distribution (plants per acre)					Utilization				
Y	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata vaseyana</i>											
85	5199	66	1333	3133	733	-	12	0	14	4	28/29
91	4799	3666	1066	2600	1133	-	43	6	24	13	24/26
98	2840	60	340	2000	500	400	17	.70	18	2	26/31
03	2560	-	40	1900	620	320	30	9	24	9	30/36
<i>Chrysothamnus nauseosus</i>											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
98	80	-	60	20	-	-	0	0	-	0	34/48
03	0	-	-	-	-	-	0	0	-	0	-/-
<i>Cowania mexicana stansburiana</i>											
85	66	-	-	-	66	-	0	100	100	0	-/-
91	0	-	-	-	-	-	0	0	0	0	-/-
98	80	-	20	60	-	20	100	0	0	0	78/107
03	20	-	20	-	-	-	0	0	0	0	62/82
<i>Gutierrezia sarothrae</i>											
85	1532	266	533	933	66	-	0	0	4	0	9/13
91	7198	600	2066	5066	66	-	0	0	1	0	10/9
98	10540	320	940	9520	80	20	0	0	1	.18	9/9
03	1320	80	20	1160	140	140	0	0	11	8	9/10
<i>Juniperus osteosperma</i>											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
98	20	-	20	-	-	-	0	0	-	0	-/-
03	40	-	-	40	-	-	0	0	-	0	-/-

		Age class distribution (plants per acre)					Utilization				
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
Purshia tridentata											
85	332	-	-	266	66	-	0	100	20	20	46/43
91	200	-	-	200	-	-	33	33	0	0	43/66
98	400	40	-	380	20	20	50	25	5	0	51/67
03	360	-	-	300	60	20	11	67	17	6	57/72
Rhus trilobata											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
98	0	-	-	-	-	-	0	0	-	0	72/96
03	0	-	-	-	-	-	0	0	-	0	58/60
Ribes cereum cereum											
85	0	-	-	-	-	-	0	0	0	0	-/-
91	0	-	-	-	-	-	0	0	0	0	-/-
98	20	-	-	-	20	-	0	0	100	0	-/-
03	0	-	-	-	-	-	0	0	0	0	-/-
Sambucus cerulea											
85	0	-	-	-	-	-	0	0	-	0	-/-
91	0	-	-	-	-	-	0	0	-	0	-/-
98	40	-	-	40	-	-	100	0	-	0	-/-
03	0	-	-	-	-	-	0	0	-	0	-/-